

IN THE CLAIMS:

On page 7, in line 1 please cancel "Claims" and substitute

:--I CLAIM AS MY INVENTION:-- therefor.

Cancel claims 1-6.

5 1-6. (Cancelled).

Add the following new claims:

7. (New) An implantable pacemaker comprising:
a pulse generator adapted to interact with at least one ventricle of a
heart to deliver pacing pulses to that ventricle;
10 a cardiac signal detector adapted to interact with the heart to detect
cardiac signals originating from an atrium of the heart;
an arrhythmia detector connected to the cardiac signal detector that
analyzes said cardiac signals to detect an occurrence of atrial
arrhythmia;
15 an impedance measuring unit adapted to interact with said atrium to
measure an atrial impedance therein; and
a controller connected to said pulse generator, said arrhythmia detector
and said impedance measuring unit, said controller controlling
said pulse generator to cause said pulse generator to deliver
20 said pacing pulses to the ventricle in a P-wave synchronous
mode as long as no atrial arrhythmia is detected by said
arrhythmia detector, and said controller switching control of said
pulse generator to a non-P-wave synchronous mode if atrial
arrhythmia is detected by said arrhythmia detector, and said
25 controller determining an atrial distention of said atrium from the
atrial impedance measured by said impedance measuring unit
and, in said non-P-wave synchronous mode, controlling said
pulse generator to increase a delivery rate of said pacing pulses
that decreases said atrial distention during said atrial arrhythmia.

8. (New) An implantable pacemaker as claimed in claim 7 wherein said pulse generator also is adapted to interact with the atrium of the heart, and wherein said impedance measurement unit measures said atrial impedance through said pulse generator.

5 9. (New) An implantable pacemaker as claimed in claim 8, further comprising:

a pacemaker housing containing said pulse generator, said cardiac signal detector, said impedance measurement unit, said arrhythmia detector and said controller;

10 a bipolar atrial lead connected to said pulse generator, said bipolar atrial lead comprising an atrial lead body carrying an atrial lead body carrying an atrial electrode and a ring electrode; and
said impedance measuring unit injecting an impedance measurement current into the atrium through said atrial electrode and using
15 said housing as a return electrode, so that a voltage representing said atrial impedance is measured between said atrial electrode and said housing.

10. (New) An implantable pacemaker as claimed in claim 7, further comprising:

20 a housing containing said pulse generator, said cardiac signal detector, said impedance measuring unit, said arrhythmia detector and said controller;

a tripolar atrial lead connected to said pulse generator, said tripolar atrial lead comprising an atrial lead body, adapted for
25 implantation in the right atrium of the heart, carrying a first ring electrode and a second ring electrode; and

said impedance measuring unit injecting an atrial impedance measurement current into the atrium through said atrial electrode and using said housing as a return electrode, and
30 measuring a voltage representing said atrial impedance between said first and second ring electrodes.

11. (New) An implantable pacemaker as claimed in claim 7 wherein said controller controls said pulse generator to deliver said pacing pulses to the ventricle at a delivery rate controlled in a closed loop by varying the delivery rate to maintain said atrial impedance substantially equal to a reference value.

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12. (New) An implantable pacemaker as claimed in claim 7 wherein said controller repetitively stores successively obtained values of said atrial distention and averages said values over a predetermined period of time.